Joint Battle Damage Assessment (JBDA)

At the conclusion of Desert Storm, the Department of Defense (DoD) identified battle damage assessment (BDA) as a major failure of the intelligence community.

> "The BDA process was difficult especially for restrike decisions. BDA doctrine and organization must be determined." (Department of Defense [DoD] Final Report to Congress, *Conduct of the Persian Gulf War*, 1992)

> "The core analysis problem…centers on tactical battlefield damage assessment, the count of Iraqi tanks, armored personnel carriers and artillery pieces knocked out by the air campaign before the ground offensive kicked off. This was the greatest intelligence failure of the intelligence community during Desert Storm." (Congress, House Oversight and Investigations Subcommittee of the Committee on Armed Services, Intelligence Successes and Failures in Operations Desert Shield/Storm 103 Congress, 1st session, 1993)

To address this problem, as well as similar recurring shortcomings in operations DESERT FOX and ALLIED FORCE, the Senior Advisory Council (SAC) recommended Joint Battle Damage Assessment (JBDA) as a high priority for the Joint Test and Evaluation (JT&E) program. As a result, the Deputy Director, Developmental Test and Evaluation (DD, DT&E), under the Director, Strategic and Tactical Systems (S&TS), Office of the Secretary of Defense (OSD), directed a JBDA Joint Feasibility Study (JFS) in June 1999.

Feasibility and Necessity

The JBDA feasibility study team used five questions to assess feasibility:

- Is there support for JBDA and the resolution of the issues?
- Will the test activity (exercise) sponsors allow JBDA to participate?
- Will the test activity (exercise) sponsors permit some "tailoring" of their activities, and will they allow JBDA to introduce potential enhancements?
- Will JBDA be able to collect the necessary data to resolve the test issues?
- Can it be done within budget constraints?

The JBDA joint test deals with a process performed in a joint environment and focused solely on improving joint warfighting capability. The most significant support that JBDA has received is from the unified Commanders-in-Chief (CINCs). The JBDA feasibility study team has found that the answer to the fundamental question "do the CINCs want a JBDA joint test?" is a resounding yes.

The JBDA feasibility study team obtained preliminary approval to participate in three major exercises and mini tests conducted at the Joint Targeting School and 480th Intelligence Group. The team determined two of the major exercises feature scenarios and exercise play that can provide data for test issue resolution. In addition, mini tests will be conducted as time and resources permit. JBDA is coordinating with the Joint Warfighting Center and its own Joint Center for Lessons Learned to obtain additional data as necessary. Continuing test planning efforts have focused on refinement for data quality and efficiency of collection, and for schedule management.

The JBDA JT&E will minimize the need for tailoring exercises by working closely and carefully with the exercise planners and developing flexible data collection procedures and methods. The three exercises identified below have extended invitations to JBDA to participate in their early planning. In addition, since many exercises rely on the Joint Warfighting Center (JWFC) to help mold exercise objectives and activity details, JBDA has coordinated with the JWFC to work in a synergistic relationship.

Exercise sponsors have been thoroughly briefed on the JBDA test approach of gathering baseline data, then introducing potential enhancements and measuring changes in performance. The sponsors have also been briefed on the enhancements that JBDA is considering. These sponsors have expressed a logical plan for the introduction of enhancements: *assess the baseline and show me what's wrong; tell me what you want to introduce, its impact and cost, and how it will fix the problem; then I will give you a yes or no.* JBDA considers this satisfactory.

The JBDA team has concluded the ability to participate in the right exercises and training environments will provide opportunities to collect the necessary data for issue resolution. The characterizations, observations of candidate exercises, development of the BDA process and requirements and the sourcing of data elements further support this conclusion. Data collection opportunities are available.

That is not to say that JBDA data collection will be easy – it will be hard, tedious work. The JBDA challenge is to design data collection procedures, forms, methods, and teams. A portion of the data collection will be automated. What is electronically collected in one exercise may be manually collected in the next. The data collection plans are well underway, and are mature enough for the team to utilize them in Ulchi Focus Lens 01 this past August in Korea. As the JT&E members observe exercises, they will not only determine the data available from the exercise collection activities, but also the JT&E-unique data collection requirements – to include the number of collectors, collector positions, media, coordination, process tracks, MSEL-reaction event recordings, etc. There are more than enough data collection opportunities to make the JBDA JT&E feasible.

JBDA test resources in this discussion are the exercises that provide the data for test issue resolution. In addition to the participation, tailoring and enhancement, and data collection considerations, scheduling is another major consideration. The exercises must occur during the test window for the JT&E. They also have to be scheduled so that there are not "too many" and so that major exercises don't run concurrently, which could overextend data collection capability. The schedules must also permit baseline and enhanced evaluations with enough time between iterations for the examination of baseline data and the identification and development of potential enhancements. Finally, the exercise schedule must contain enough iterations for "make-ups" in case of exercise cancellations or JBDA inability to respond to a particular iteration. The current JBDA exercise schedule meets these considerations. The schedule is near optimal for conducting baseline and enhanced evaluations and for makeup opportunities.

The JBDA JT&E will participate in the United States Pacific Command/United States Forces Korea (USPACOM/USFK) Ulchi Focus Lens (UFL) exercise and the United States Central Command (USCENTCOM) Internal Look exercise. Unlike other USFK exercises, UFL has not been cancelled in the past and USFK has repeatedly asked for JBDA's participation. Internal Look, while also eager for JBDA participation, does not offer the same robust

schedule; it only occurs every two years, and the second exercise occurs late in the JBDA schedule. This exercise is paramount to USCENTCOM's training goals; it enjoys very high priority and receives a substantial, dedicated, and full-time planning effort.

Problem Statement

In October 1999 the JBDA feasibility study team hosted an initial Joint Working Group (JWG) composed of 25 subject matter experts from the Unified Commands, Services and National Intelligence Agencies. Nearly all attendees possessed recent BDA experience from Operations DESERT FOX and ALLIED FORCE. The consensus of the JWG was that, while BDA has been improved since DESERT STORM, the underlying problems have not yet been fully resolved. The focus of recent advances addressed the BDA of fixed targets, while little effort or progress has been made in mobile target BDA. The JWG stressed the importance of BDA for mobile targets, particularly those targets associated with fielded maneuver forces. This issue spreads across the following JWG-identified problem areas:

1. Processes and Procedures. Doctrine, TTP, and CONOPS refinements developed since DESERT STORM and implemented in subsequent operations address the BDA support process – not how to do BDA on fielded maneuver forces.

2. Training. Training and training management is still lacking for analysts, BDA cells, and exercise support, especially in regards to BDA of maneuver forces.

3. Interoperability. BDA C4I systems and reporting and collaboration architectures have been changed since DESERT STORM, but interoperability was still a significant problem in ALLIED FORCE even without emphasis on maneuver BDA.

4. Sensor Utilization. While sensors are readily used to identify potential targets against which military action will be taken, the use of these sensors for determining the effects of the military action is lacking.

The JBDA Feasibility Study Director formulated the following problem statement through iterative dialogue between the SAC, the Technical Advisory Board (TAB), and the JWG.

> **Study of the joint targeting process in support of the Joint Force Commander indicates that, while enhancements have been implemented, BDA still needs improvement to provide effective and timely assessments of Fixed and Mobile Targets.**

The team identified the *planning, collection, processing & exploitation, production* and *dissemination* functions as pertinent to the goal of receiving timely and accurate BDA. Further discussion of these functions produced questions for analysis grouped into four categories: *doctrine, organization, process*, and *technology/equipment*.

Objective and Charter

From the problem statement and the JWG, two issues were selected for test and evaluation:

- *How much will changes in the mobile target BDA process improve support to the JFC?*
- *How much will changes in the fixed target BDA process improve support to the JFC?*

The objective of the JBDA Joint Test and Evaluation is to enhance the combat effectiveness and efficiency of air, land, and sea forces to maintain situational awareness while achieving the commander's objec-

tives. JBDA focuses on BDA reporting (task accomplishment) and the impact this reporting has on supporting key decision points (mission outcomes). The program is concerned with the ability to provide accurate BDA *in time* to support these decision points and refining the process that produces them. The JBDA JT&E will:

- Identify, test, and assess current BDA processes and procedures, and recommend and evaluate enhancements.
- Characterize current BDA training and manpower authorizations for unified command, Service, and agency BDA personnel and recommend and evaluate training improvements.
- Define systems and architectures interoperability, and nominate and test fixes.

The SAC recommended JBDA for charter by on 13 July 2000. On 14 August 2000, the Under Secretary of Defense chartered the JBDA joint test team to:

> "Employ multi-Service and other Department of Defense (DoD) agency support, personnel, and equipment to investigate, evaluate, and improve BDA support to the joint force commander in order to facilitate operational decision-making."

JBDA will establish a baseline case by evaluating and documenting current BDA procedures in realistic operational scenarios. Potential deficiencies and opportunities for improvements will be identified and verified. Potential improvements will be identified, installed, and tested in environments as closely aligned with baseline measurements as possible. Analysis of the collected data will be used to evaluate their effectiveness and suitability. The outcome of these evaluations will be used to determine the validity of these beneficial hypotheses.

Program Organization

The Army is the lead Service for the JBDA test and the Air Force and Marines and Navy are participating Services. Prior to the arrival of government personnel, the in-place JFS team accomplished the initial program milestones for development of the Program Test Plan. Colonel James G. Diehl is the Joint Test Director.

The JBDA JT&E shares a leased building with the Joint Warfighters (JWF) JT&E in Suffolk, VA between the US Joint Forces Command (USJFCOM) J7 and J9 facilities. To accommodate the growing needs of USJFCOM's J9, the JBDA JT&E will relocate to a nearby facility in early 2002.

Test Approach

The decisions that BDA supports are the result of a complex staffing and decision-making process. Some of the most urgent requirements for targeting officers to support this decision-making process reside within BDA, particularly in the areas of mobile target and maneuver force BDA, and a training pipeline that supports this improved process. The JBDA JT&E will evaluate the *BDA process* utilized by a joint force to conduct physical, functional and target systems assessments, and the overall ability of this process to support operational planning and execution. The most appropriate mission-level measure of success for this test is the improvement of BDA information available to these decision-makers.

In addition, JBDA will assess situational awareness for each function and process. An accurate and common picture of the operational situation at all organizational echelons is essential for the successful conduct of combat operations. Commanders and staffs at all organizational echelons need to know the status and position of enemy units. The baseline test and an initial characterization of BDA processes and problems will illustrate the requirements levied on BDA by current joint operations. Subsequent testing

will provide the measure of improvement to the joint force with enhancements in place.

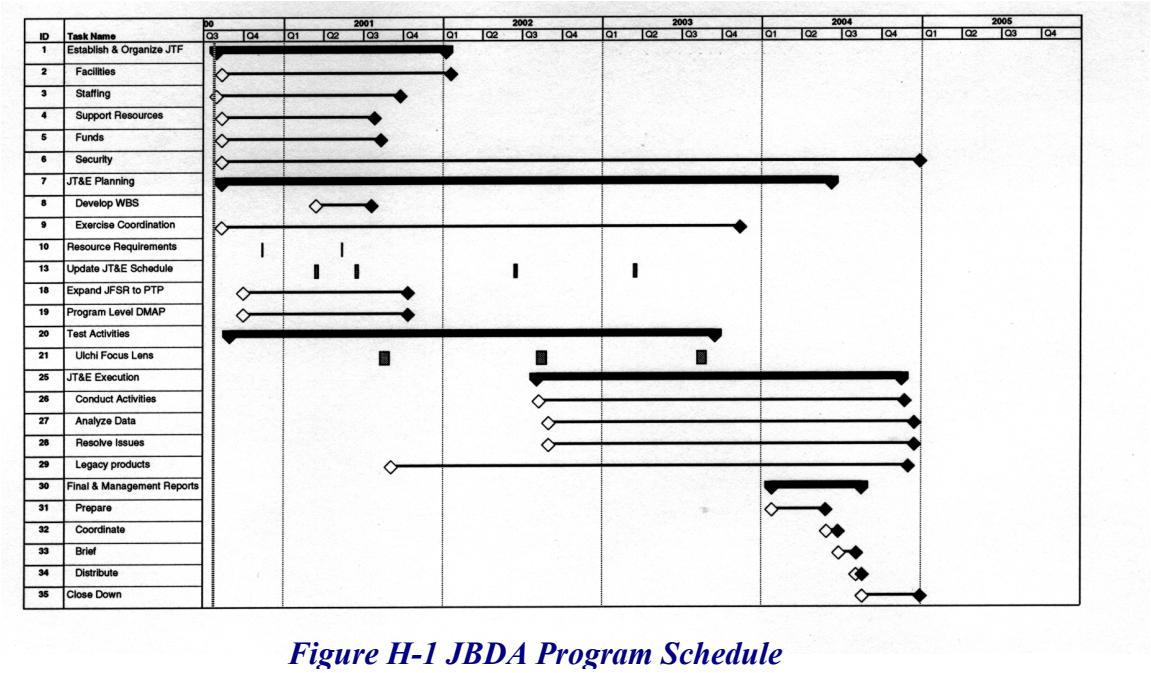

Figure H-1 JBDA Program Schedule

Based on this background, the JBDA JT&E will:

- Identify, test and evaluate current BDA processes and procedures.
- Characterize current BDA training objectives and levels of proficiency, and recommend and evaluate improvements. Training evaluations will include individual (analysts), collective (cells), and exercise (systems) training.
- Characterize current BDA manpower authorizations for unified command, Service, and agency BDA personnel, and recommend and evaluate the impact of BDA manpower modifications.
- Define BDA interoperability issues with current C4I systems, reporting and collaboration architectures, and nominate, test and evaluate changes.
- Identify critical factors that degrade BDA reporting.
- Develop and recommend potential enhancements that address the identified problems and improve BDA reporting.
- Test and evaluate effects of approved enhancements on BDA reporting.
- Develop a series of legacy products for use by the Joint Staff, the Combatant Commands, other joint organizations, and the Services.

The JBDA JT&E will be conducted in operationally realistic environments during JFC joint exercises and other training venues that include JTF functional elements to assess the effectiveness and efficiency of the BDA process. Central to the JT&E is the test dendritic structure used by the study team to decompose the issues into sub-issues, measures, and data requirements. JBDA has used the BDA cycle as the basis for the dendritic structure. This ensures end-to-end testing of each critical function, regardless of the enhancement being tested.

JBDA issues and measures arise from the problem statement and are based on "BDA information required by the commander." BDA information for fixed targets is provided by Phase I, II, and III BDA reports. BDA information for mobile targets is provided by similar reports, as well as up-

dates to the order of battle (OB), Combat Effectiveness models, and the SITMAP. Each of these products provides a measurable output of the BDA process.

Timeliness measures whether the portion of the BDA process evaluated occurs at a suitable or opportune time in comparison to the command's battle rhythm. The degree to which this can be affected is largely determined by measuring the mean elapsed time (MOP) to accomplish a task over *n* number of trials. Scheduling changes or modifications to the process may also be appropriate at times.

Accuracy measures the extent to which the portion of the BDA process evaluated conforms to an established or directed standard. The standards are derived from CONOP/TTP, lessons learned and ground truth studies, and they are illustrated in the Data Elements (DE) to be contained in the Program Test Plan's (PTP) Integrated Data Requirements List (IDRL).

Completeness measures the extent to which the portion of the BDA process evaluated incorporates all the necessary elements and accomplishes all the required tasks. These tasks provide the basis for the performance measures (MOP). The specific elements required making the process output complete (task lists) are delineated as data elements found in the IDRL.

Regardless of the specific BDA processes evaluated (fixed or mobile, USFK or USCENTCOM, etc.), damage assessments and reports include the key steps briefly described below. These steps provide a common basis for measuring and comparing the information management performance of the fixed and mobile target BDA processes.

Planning: BDA Planning exists in several forms.

- *Deliberate* (Long-Term) *Planning* includes the formation of a BDA Cell, developing CONOPS and systems architectures, and the training pipelines to support them.
- *Crisis-Action Planning* begins the moment the NMCC recognizes a threat. This includes standing up the BDA Cell, providing or redistributing required C4I systems support, acquiring and training augmentees, becoming familiar with the target sets, forces in theater, and contingency-specific reporting and dissemination architectures.
- *Daily Planning* consists of those actions performed on a daily basis while in a conflict. This includes coordinating intelligence collections for BDA requirements and becoming familiar with daily (recurring) planning products (ATO, MAAP, Ground Scheme of Maneuver, High-Payoff Target List (HPTL), Attack Guidance Matrix (AGM), etc.). JBDA will collect data to assess this daily planning.

Collection: Collections for BDA begin when a particular collection requirement is requested or a standing requirement is actually collected and end when collected information is passed to a site responsible for processing and exploitation. This includes both the tasking and actual collection processes.

Processing and Exploitation: BDA Processing and Exploitation begins when an exploitation site receives information from a collection platform and ends when the exploited product is disseminated for BDA production.

Production: BDA production begins when the BDA Cell (the agency specifically tasked and organized to do BDA) receives an exploited product, and ends when a formal BDA report is disseminated. Included in this process is validating and determining Phase I (Physical damage), the determination of Phase II (Functional) and Phase III (Target Systems) damage assessments, and the preparation of the related reports. In the

case of fielded (maneuver) forces, the 'product' is the update to the Order of Battle (OB) and Combat Effectiveness (CE) models (i.e., Combat Power Updates) rather than an individual 'report.'

Dissemination: BDA Dissemination begins when a report produced in the previous step is completed and ends when the BDA cell receives confirmation that the report or product was received by the appropriate organizations.

Mission Level Measures (MLMs) address the *outputs* of the BDA process and how they are utilized by the command. Improvements in fixed and mobile target BDA procedures translate into increased responsiveness to the command's BDA requirements, better supporting the decision-making process. The capability of BDA reporting – (by target category and report type) to provide the actionable information required to support these decision points, will be measured through the MLMs. JBDA has two MLMs based on two basic questions: Was actionable BDA information provided? Was BDA information available to support the decision maker?

The JBDA JT&E will be conducted in the following six phases:

Organization. This phase encompasses those actions necessary to "stand up" the joint test and evaluation team following the chartering decision and includes establishing offices, obtaining personnel and equipment, etc. This phase is currently about 90% complete.

Spin-up. This phase is currently underway. The objective for this phase will be to develop and refine test plans and procedures, observe a major joint exercise, practice data collection, and exercise data transmittal. These plans and procedures will be further refined and/or validated during a second joint exercise.

Baseline Testing. This phase will consist of documenting and evaluating the processes and technology currently utilized for conducting BDA in order to construct a baseline for evaluating improvements. The baseline-testing phase is essential for measuring and analyzing the result of enhancements during the succeeding phases. The baseline data describing current procedures for conducting BDA will provide an immediate contribution, as there is a void in the documentation of current procedures. This documentation and the resulting contribution to the training effort will increase combat effectiveness even before the JBDA enhancements are introduced during subsequent testing. JBDA will collect data for the baseline test phase during theater exercises conducted by the warfighting CINCs in 2002. The JT&E, through its collection, analysis, and reporting of baseline and enhanced joint battle damage assessment procedures, will provide data for all combatant commands to examine for application to their operations. This legacy product can also be used to build valuable training plans.

Enhanced Process Testing. In this phase, the joint test and evaluation team will examine the effectiveness of proposed enhancements to conducting BDA by collecting data on the performance of the entire enhanced BDA process. Enhancement testing will be conducted during 2003. The shortcomings in BDA are widely recognized, and numerous organizations have addressed the issue. As a result, many improvements in the areas of doctrine, TTPs, and equipment have been proposed. Doctrine development has advanced in narrow areas (e.g., the development of Joint Publication 3-60, *Joint Doctrine for Targeting*, and numerous command and service BDA CONOPs) and several software and hardware improvements have been evaluated and incorporated. In today's warfighting, in which each component and agency has overlapping capabilities and responsibilities to assess battle damage, *the ade-*

quacy and utilization of BDA by a joint force in a realistic environment has not been addressed by any program other than JBDA. The JBDA JT&E will present an opportunity for testing enhancements/test articles—those proposed by other organizations as well as JBDA-produced—in the right environment.

Analysis and Assessment. After the conclusion of the test activities, the joint test team will analyze the data to establish baseline performance and assess the effects of the tested enhancements on combat effectiveness. These assessments will determine the value of each tested enhancement. Sensitivity analysis will support further continuous process improvement in the form of future enhancement selection and BDA process modeling and simulation. Periodically, findings and lessons learned will be disseminated through Service channels and to the DD, DT&E in the form of "interim reports."

Reporting and Close Down. The joint test team will prepare the final JT&E briefings and final report, transition the JT&E's legacy products, and close out the JT&E.

Background

OSD directed the JBDA joint feasibility study in June 1999. The JFS team began by modeling the current 'perceived as-is' BDA process and conducted a thorough problem characterization of BDA.

The JBDA feasibility study team provided briefings to the Joint Staff, the combatant commands, the Services, and the Test and Evaluation (T&E) agencies from the action officer through the director, and, in some cases, the Commander in Chief (CINC). These briefings solicited guidance and support, ensured all parties that the JBDA effort was on track, and provided a venue for the JFS team to raise the awareness level of current BDA processes and identified problems.

As the JFS team progressed through the study, it developed a detailed analysis methodology and reviewed potential test venues. The JFS team identified issues and measures to focus on areas requiring the most urgent attention and selected the test approach, schedule and venues with the guidance of the TAB and a General Officer Steering Committee (GOSC). The completed JFS report (unclass) is available on the JBDA website at: http://www.jbda.jte.osd.mil

2001 Accomplishments

Completion of Program Test Plan. JBDA completed the coordination draft of the PTP, including program level Data Management and Analysis Plan (DMAP). Detailed test planning for individual test events has already begun.

Participation in UFL 01. JBDA participated in the 26th Ulchi Focus Lens (UFL 00) Command Post Exercise in the Republic of Korea (ROK) in August 2000 to observe the BDA process, and validate future data collection and analysis plans. Eight JBDA team-members deployed to Osan Air Base, command post (CP) Tango, and Camp Humphreys, to stand side-by-side with the U.S. and ROK players and gamers to observe BDA processes in support of future test operations. Additional personnel observed processes at the Federated BDA Partners locations at JICPAC, JFIC, STRATJIC, SPACECOM CIC, and the NMJIC.

Completion of BDA IDEF 0 Model. A characterization of current BDA processes and problems was completed and modeled in IDEF 0 (ICAM Definition). The IDEF 0 BDA model was provided to the JCS J8 Strike Joint Warfare Capabilities Assessment (JWCA) and OSD(C3I) at their request.

Participation in Intrepid Flow 01. JBDA observed BDA operations during the

USCENTCOM Intrepid Flow 01 exercise (February 2001), and also a Ground BDA Exercise in November. This observation provided valuable information on BDA processes in a second theater of operations, and is being used to support future test planning and enhancement development and analysis.

Participation in Union Flash 01. JBDA observed BDA operations during the USEUTCOM Union Flash 01 exercise (May 2001). This observation provided valuable information on BDA processes in a third theater of operations, and is being used to support future test planning and enhancement development and analysis.

Other Accomplishments:

BDA Symposium. JBDA held a DOD-wide BDA Symposium in June to gather community inputs, garner ideas for potential solutions and identify possible future enhancements.

Senior Officer Seminar. In September the JBDA team met with a retired senior flag officer in seminar format to discuss JBDA matters. The specific thrust of the discussions was the needs of the Joint Force Commander with respect to BDA and better and quicker decisions.

Initial GOSC. Planning for the JBDA GOSC began in the fall of 01 with a winter (Jan-Feb) 02 target date for its first formal meeting. Planned emphasis is to be on reviewing the DRAFT PTP and resolving several programmatic issues.

Publication Review. JBDA members also reviewed and commented on the Draft Joint Publication 3-60, *Joint Doctrine for Targeting*. Combatant commands have already sought out JBDA subject matter expertise, and JBDA input has been included in USCENTCOM and USFK BDA CONOPS.

Planned Activities

Signature of Program Test Plan and Data Management Analysis Plan. The Program Test Plan (PTP) with the Data Management Analysis Plan (DMAP) was expected to be approved and published by DS&TS and DD, DT&E in December of 01.

Baseline Testing at UFL 02. JBDA will conduct baseline testing of BDA operations in UFL 02. This will include observing operations at the Federated partners as well as the main in-theater participants.

Contingency Test Planning. The JBDA JT&E Program Test Plan (DRAFT) included arrangements to be incorporated into national command centers should a contingency arise because of a real-world situation. As world events unfolded in the fall of '01 the JBDA JT&E team was involved in observing and collecting JBDA process data

Legacy Products

A legacy product provides a basis to implement the conclusions and recommendations of the JT when it is completed. Potential users of JBDA legacy products include the Joint Staff, combatant commands, the Services, and other JT&E efforts.

TTP Development. Documentation of the BDA process will provide the necessary basis for determining what TTPs currently exist, how the process works, and what is needed. This "snapshot" of the current BDA process supports the evaluation of current TTPs and refinements to existing doctrine. JBDA will prepare a compendium of data that supports JT&E findings and outcomes concerning the operational concepts and TTPs for both fixed and mobile target BDA as well as a combat effectiveness model that fulfills the JFC's requirements. The documentation will address problem areas identified during the JT&E and will recommend changes to enhance combat effectiveness. The users of these data will be the Joint Staff, combatant command staffs, joint task

forces (JTFs), the Service and component staffs, and the commanders and staffs of operational units at all echelons.

During the JT&E, the test team will recommend changes to specific joint publications, multi-Service publications, and Service manuals that should be revised based on JBDA findings. It is conceivable that JBDA could produce requirements for a completely new publication. The JT&E team will prepare recommended changes and provide them to the Joint Staff, Services, and agencies as appropriate. Examples of joint and service publications that are potential beneficiaries of JBDA findings include: Joint Publication (JP) 3-60, *Doctrine for Joint Targeting*; JP 2-01.1, *Joint Tactics, Techniques, and Procedures for Intelligence Support to Targeting*; DIA Handbooks; Air Force Instruction 14-207, *Air Force Targeting*; and Field Manual 34-3, *Intelligence Analysis*. Potential products and enhancements include the following:

- **TTP for Maneuver Force and Mobile Target BDA.** The TTP would define OB and BDA relationships in CONOPs, support development and recommendations for standardized CE models; combat weights, factor ratios, etc.; common OB updating; CE computation; and fusion analysis procedures.
- **TTP for BDA Collaboration.** The TTP would include web posting requirements (including mirror site provisions), access guidelines, architecture for federation, and recommended target set responsibilities (possibly a mix-and-match matrix). It would utilize standardized software (Cold Fusion, JCE) and address possibilities for BDA authority (Centralized vs. Decentralized Authority).
- **MASINT training and CONOPS for non-MASINT personnel.** The CONOPS and Training manual would focus on cross-cueing and analysis and fusion with other intelligence disciplines. It would utilize a "MASINT for Dummies" approach, interpreting a complex topic into an understandable format.

Training. The JT&E team will identify and document potential enhancements to BDA training. This will cover the training of individuals, units, component commands and Service staffs in BDA and collection management and coordination. As a result of the test activities conducted during the JT&E, the team will gain expertise in the methods and processes needed to enhance joint operational training. In fact, the mini-tests are designed to test existing training procedures and new enhancements to training procedures. The enhanced training program will be tested in realistic conditions as lead-in training for a joint exercise. The team's findings and recommendations will be documented and provided to J2-T for the combatant commands, the Services, and other OSD and joint organizations for inclusion in the Universal Joint Task List (UJTL) CJCSM 3500.04. Curriculum enhancements will be recommended to DIA, joint and service schools. These recommendations can also be incorporated into joint and Service-hosted battle manager exercises to train the warfighting staff on multi-source collection management coordination. Some potential products and enhancements include:

- **Develop a tracking mechanism for BDA experience and training.** This may include a SEI code (Special Experience Identifier), J1 "flag" for records, or Individual Service personnel systems "flag" for records. This step would allow easy identification of BDA-qualified personnel in times of crisis.
- **Improved training guidelines, training materials, and exercise support for BDA all-source analysts, and imagery analysts.** Such support could cover BDA Cell procedures, management, collection requirements and capabilities, coordina-

tion processes (between echelons and federated partners), and improved access to real-world imagery, WSV/ACV, and MISREPs for exercise support.

- **Recommend and develop executive level training for potential JFCs.** Such a venue would illustrate the importance of realistic "Guidance & Objectives" and BDA to targeting process. It would summarize BDA in recent operations and address ongoing community initiatives.

Systems. JBDA results will be the basis for providing recommendations to J2-T, Combatant Commands, and the Services for developing or modifying systems to enhance BDA. JBDA will also investigate the use of COTS/GOTS systems (primarily interactive software programs with imagery), such as that used in industry training to improve analyst training. Coupling such tools with a tailored intelligence work-station program can expand the training to simulate a JTF environment and include collection management training. The test team will identify problems in areas such as the interoperability of communications and data systems and the commonality and effectiveness of tactical situation displays. The test team will prepare inputs that document such problems and recommendations to correct them. The test team will provide these inputs to J2-T for the Joint Staff, OSD agencies, and the Services. These inputs will provide a basis for preparing requirement documents such as Mission Need Statements (MNS) and Operational Requirements Documents (ORD). Examples of potential products and enhancements are:

- **Linked Web databases (auto updating with standardized formats) directly supporting targeting and BDA.** This would provide standardized formats for target folders, and "one-stop-shopping" for all BDA information via a single web page location with master listing. It would be searchable, with active links to applicable information (BDA, WSV/ACV, MISREPs, etc.).
- **Introduction of interoperability (interconnectivity) efforts** that are currently in development for existing communications equipment to permit communications between the BCD and JAOC, and among the ARFOR tactical operations centers (TOCs), the MARFOR combat operations centers (COCs), and the AFFOR direct air support centers (DASCs). This initiative could relieve the communications congestion that has accompanied the introduction of federated BDA.
- ***BDA Cell Composition.*** No joint doctrine exists to describe how a BDA cell should be organized and manned. JBDA expects to document the various organizational structures currently in use and identify the positive attributes and problem areas associated with each example. Again, this documentation would serve as input to joint publications and would be made available to J2-T for the consideration of the combatant commands. One known problem is that BDA cells are generally neither permanently manned nor have personnel identified for them. BDA cells are ad-hoc organizations. This is a sensitive matter, since permanently manning the cells draws manpower from other areas, and preassigning personnel for the cells has the same effect. JBDA does not expect there to ever be a permanent manning system for BDA cells as the manpower could be better utilized when the BDA cell is not functioning. However, JBDA will investigate current and alternate manpower sources for the contingency assignment of personnel to BDA cells. In addition to the special identifiers mentioned under training, another potential product and enhancement is:

- **Establish permanent, special-purpose Reserve unit(s).** A dedicated BDA Cell leveraging Total Force concepts could be established as a single organization tasked to support any command (as needed), or as separate units permanently supporting a single command. It could be either a single, centralized unit that would deploy as needed, or exist as multiple units dedicated to supporting theater staffs. Such units would provide BDA longevity and stability of assignment through permanent specialists trained and experienced in BDA, knowledgeable on systems, procedures, and targets of the supported command. They would be available for exercises and real-world operations, deployed and employed as a BDA Cell.

Process. The BDA process encompasses all the issues discussed above. It works well only if the TTP, training, systems, and BDA cells are satisfactory. Conversely, excellent TTP, expert training, great systems, and robust, productive cells cannot produce effective BDA if the BDA process is broken. Of course, any process evaluation team must understand that a deficient area can mask problems in the process. As a product of research into the lessons learned from recent joint operations and exercises, the JBDA team will publish a characterization discussing the most notable wartime problems encountered in the joint environment when conducting BDA. These examples will provide the Services with a relevant exemplar that can be used as an established point of departure in the training of battle managers.

JBDA will collect test data on the BDA process during a major exercise. The test team will then examine current processes for both fixed and mobile target BDA, and prepare recommendations to J2-T, and the combatant commands and staff. JBDA will repeat the process during a second major exercise with the proposed enhancements fully implemented. Subsequent comparative analysis will identify what did and did not work, focusing improvements on a more effective BDA process.

Documentation of Operational Concepts and Tactics, Techniques, and Procedures. The documentation of the BDA process baselines will be of significant value in and of itself. There is near total agreement that documentation is a potential problem in our warfighting abilities. One hypothesis of JBDA is that shortfalls in performance are related to the shortfalls in documentation. In addition to providing the comparative foundation for enhancement testing, the documentation and promulgation of the BDA procedures will allow commanders an opportunity for objective scrutiny and provide trainers with the building blocks for tomorrow's curriculum. JBDA will prepare a compendium of data that supports JT&E findings and outcomes concerning the operational concepts and TTP to effectively conduct BDA. The documentation will address problem areas and will recommend changes to enhance combat effectiveness. The users of this data will be the Joint Staff, combatant command staffs, the Service staffs, and the commanders and staffs of operational units. This data may also serve as a benchmark baseline of targeting transactions to support future improvement efforts.

Additions to JCS-Approved Joint Definitions. JBDA will develop new and revised joint terminology definitions for incorporation into Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms. These definitions will improve the joint lexicon by clarifying the current terminology and defining new terms to better describe a JFC's responsibilities for BDA.

CONTACT INFORMATION

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